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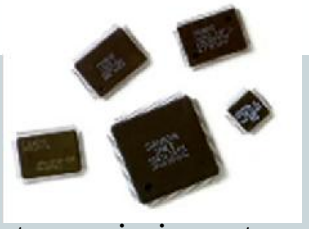
PROFIBUS DP ASICs



Design

ASPC 2
The ASPC 2 is a preprocessing communications chip for master applications with a maximum transmission rate of 12 Mbit/s. The ASIC has not been disclosed. The brief user manual describes the pins and the electrical properties of the ASPC 2. A separate microprocessor and the appropriate firmware are required for operation. The firmware is tuned to the 80C165 processor and can be obtained by purchasing a license.

SPC 3
The SPC 3 is a preprocessing communications chip with a processor interface. The SPC 3 processes message frame identification, address identification, execution of the data back-up sequences and protocol processing for PROFIBUS DP.Firmware is offered for the Siemens SPC 3 (see ordering data).

SPC 3LV
The product portfolio for intelligent PROFIBUS slave applications was expanded by a 3.3 V version. The SPC3LV is 100% compatible in terms of functions and pins to the 5 V version (SPC3).

DPC 31
The DPC 31 is a preprocessing communications module with a processor interface and an integrated processor core (C31 core).
It supports the connection of intelligent field devices as slaves on PROFIBUS DP and PROFIBUS PA.
The DPC 31 autonomously processes all communications tasks and has, in addition, an integral C31 core for further applications. It combines the communication properties of the ASICs SPC 3 and SPC 4-2 in one chip.
The integrated C31 core can also be programmed as required. Firmware is offered for the Siemens ASIC DPC

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SPC 4-2

The SPC 4-2 is a preprocessing communications chip with a processor interface. It is designed for combined applications and due to the Low Power Management function, it is ideally suited to use in intrinsically safe applications. Firmware is offered for the SPC 4-2 by the company TMG itec [1)]. The signals are converted for PROFIBUS PA using the SIM 1-2 module.

1) Order from:
   TMG itec
   76137 Karlsruhe
   Tel. +49 (0)721 82 80 60

SIM 1-2

The SIM 1-2 supplements the SPC 4-2 or DPC 31. Only a few external components are required in addition to these ASICs to be able to connect field devices to an intrinsically safe network in accordance with PROFIBUS PA. In combination with the SPC 4-2 or DPC 31, the functions of a PROFIBUS PA slave can be processed from physical linking through to communication control.
SIM 1-2 supports all send and receive functions (including Jabber Control) as well as the high-resistance decoupling of auxiliary power from the bus cable. It provides an adjustable, stabilized supply voltage and also supports configuration of an electrically isolating power supply with just a few passive components.
The ASIC contains a special interface logic which provides a low-overhead, minimum power interface for galvanic signal separation as an alternative to the standard signal interface.
It can be connected to all Manchester encoders/decoders to the IEC 61 158-2 standard at 31.25 kbit/s.

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LSPM 2

LSPM 2 is a single-chip solution with 32 input/output bits. It processes all bus communication autonomously. An additional microprocessor and firmware are not required. The compact MQFP casing with 80 pins makes it ideal for applications with low space requirements.

FOCSI

This ASIC functions as an expansion to the existing PROFIBUS ASICs. The FOCSI module (Fiber Optic Controller from Siemens) ensures proper electrical conditioning and transfer of the received/sent optical signal. To inject the signal into a fiber-optic conductor, apart from FOCSI, the appropriate optical transmitter and receiver will be required. FOCSI can be used with the PROFIBUS DP ASICs described above.

Additional ordering data available on request

Technical specifications

	LSPM 2	SPC 3	SPC 3LV	DPC 31
Protocol	PROFIBUS DP	PROFIBUS DP	PROFIBUS DP	PROFIBUS DP, PROFIBUS PA
Application range	simple slave application	intelligent slave application	intelligent slave application	intelligent slave application
Transmission rate, max.	12 Mbit/s	12 Mbit/s	12 Mbit/s	12 Mbit/s
Bus access	in ASIC	in ASIC	in ASIC	in ASIC
Automatic determination of transmission rate	yes	yes	yes	yes
Microprocessor required	no	yes	yes	integrated
Scope of firmware	not required	6 to 24 KB	6 to 24 KB	approx. 38 KB
Message buffer	-	1.5 KB	1.5 KB	6 KB
Power supply	5 V DC	5 V DC	3.3 V DC	3.3 V DC
Power loss, max.	0.35 W	0.5 W	<0.5 W	0.2 W
Permissible ambient temperature	-40 °C … +75 °C	-40 °C … +85 °C	-40 °C … +85 °C	-40 °C … +85 °C
Housing	MQFP, 80-pin	PQFP, 44-pin	PQFP, 44-pin	PQFP, 100-pin
Frame size	4 cm^2	2 cm^2	2 cm^2	4 cm^2

Delivery quantities (pcs.)	6/66/330/4950	6/96/750/960/4800	5/160/800/1000/4800	STEP B: 6/60/300/5100 STEP C1: 6/66/660/4620

	SPC 4-2	ASPC 2	SIM 1-2	FOCSI
Protocol	PROFIBUS DP PROFIBUS FMS PROFIBUS PA	PROFIBUS DP PROFIBUS FMS PROFIBUS PA	PROFIBUS PA	-
Application range	Intelligent slave application	Master application	Medium Attachment	Medium Management Unit
Transmission rate, max.	12 Mbit/s	12 Mbit/s	31.25 kbit/s	12 Mbit/s
Bus access	in ASIC	in ASIC	-	-
Automatic determination of transmission rate	yes	yes	-	-
Microprocessor required	yes	yes	-	-
Scope of firmware	3 … 30 KB	80 KB	not required	not required
Message buffer	3 KB	1 MB (external)	-	-
Voltage supply	5 V DC, 3.3 V	5 V DC	via bus	3.3 V DC
Power loss, max.	0.6 W at 5V 0.01 W at 3.3 V	0.9 W	0.05 W	0.75 W

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Permissible ambient temperature	-40 °C … +85 °C	-40 °C … +85 °C	-40 °C … +85 °C	-40 °C … +85 °C
Housing	TQFP, 44-pin	P-MQFP, 100-pin	MLPQ, 40-pin	TQFP, 44-pin
Frame size	2 cm^2	4 cm^2	36 mm^2	2 cm^2
Delivery quantities (pcs.)	5/160	6/66/660/4620	30/60/1000	40